Advanced Bonding Technology Facility

Purpose:

To develop and evaluate adhesive bonding processes for use on NASA projects.

With emphasis being placed on weight reduction in space propulsion systems, non-metallic joining processes are receiving increased use. Adhesive bonding is a widely used joining technique for buildup of structural components. The Advanced Bonding Technology facility is equipped with the basic tools to conduct adhesive bonding process development and characterization tests to support both design and manufacturing activities that support the Space Shuttle, the Space Station, and many other NASA projects.

The adhesive bonding lab consists of a clean work area with an environmental control system that maintains controlled temperature, humidity, and particulate filtration. The lab is located directly adjacent to a surface preparation and cleaning area with pass through access to the bond lab. The bonding area contains various adhesive mixers with vacuum deairation capability and control in process adhesive temperature for exothermic materials. Various configurations of test specimens are prepared to provide designers with structural properties to be used in the design of differing systems. These include both basic tensile coupons and more complex specimens used to determine shear strength capability and fracture properties of bonded systems.

The test lab contains many of the instruments to characterize adhesive processes such as viscometers and gelation timers. Once the adhesive processing, surface preparation and testing is complete, the collected data is analyzed and used to develop allowables for design, to qualify adhesive materials for flight, and to support manufacturing processes at MSFC.

In addition to performing process development work, the facility also has the capability to be used to manufacture small one of a kind prototype hardware.

Point-of-Contact:

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